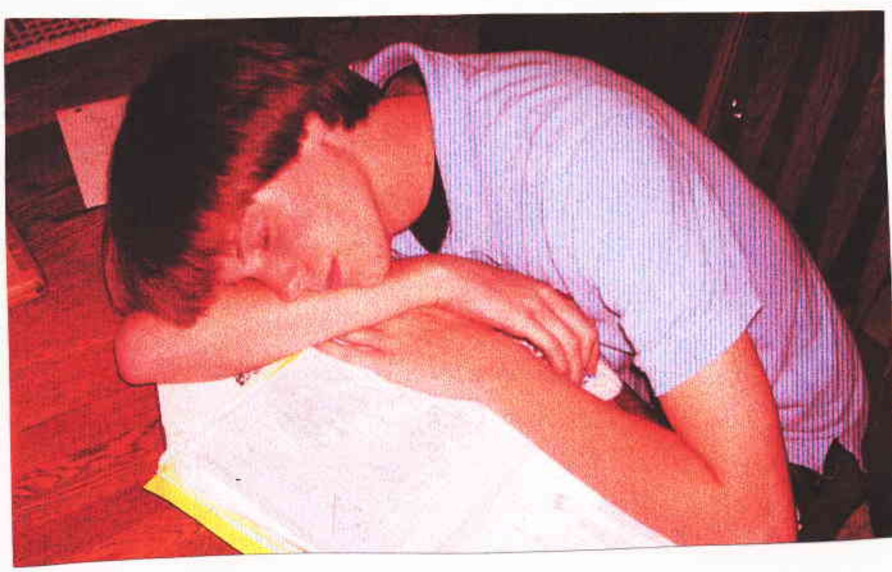
The Day John Saw Geometry

By John Lawrence

Once, not too long ago, there was a boy named John. John was your average student, not bad grades, in lots of school activities, and he also happened to be in honors geometry. Although John tried very hard, he just never seem to be good at geometry. One friday, John's geometry teacher, Mrs. Powell gave him a lot of studying to do over the weekend for the big test that was on Monday. Later that night, after everyone had gone to sleep, John was was still studying for his geometry test.

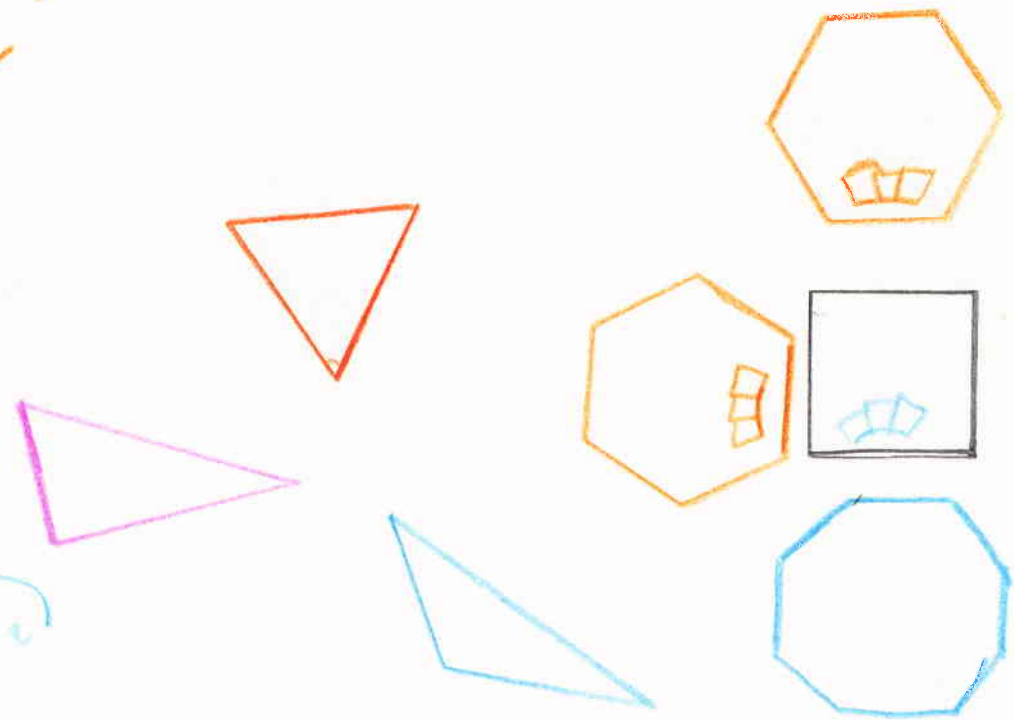
"Well, I do have to study if I want a good grade," John said. So he studied, and studied, and studied untill he fell asleep, right on top of his books.



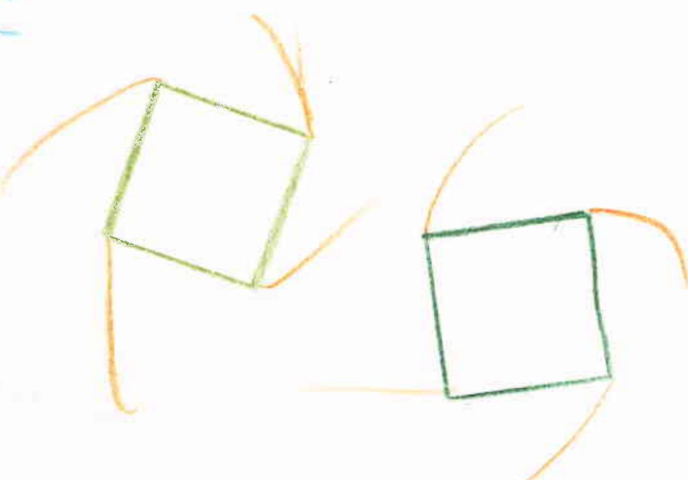
$\frac{1}{2}(B)(h)$

Later that night, John started to dream. In his dreams he saw triangles dancing, squares spinning, and even hexagons playing poker with the octagons. They had great poker faces. John saw all the shapes that he had been studying the night before. John continued to sleep, and saw the formulas for area and volume. He saw complex equations, drifing through his head.

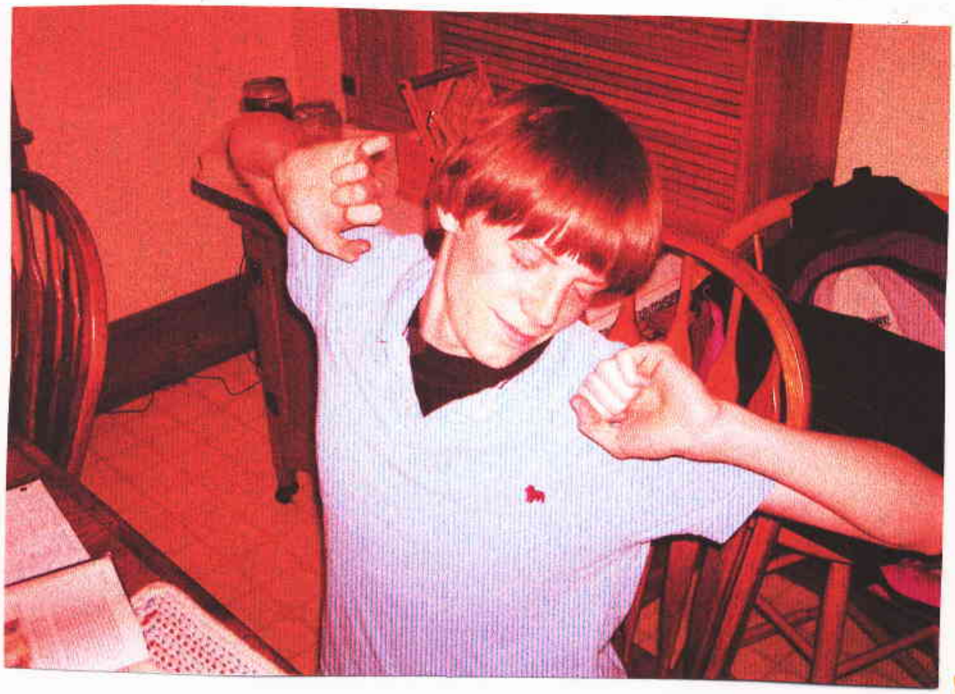
$E = M$



$\frac{1}{2}(b)(h)$



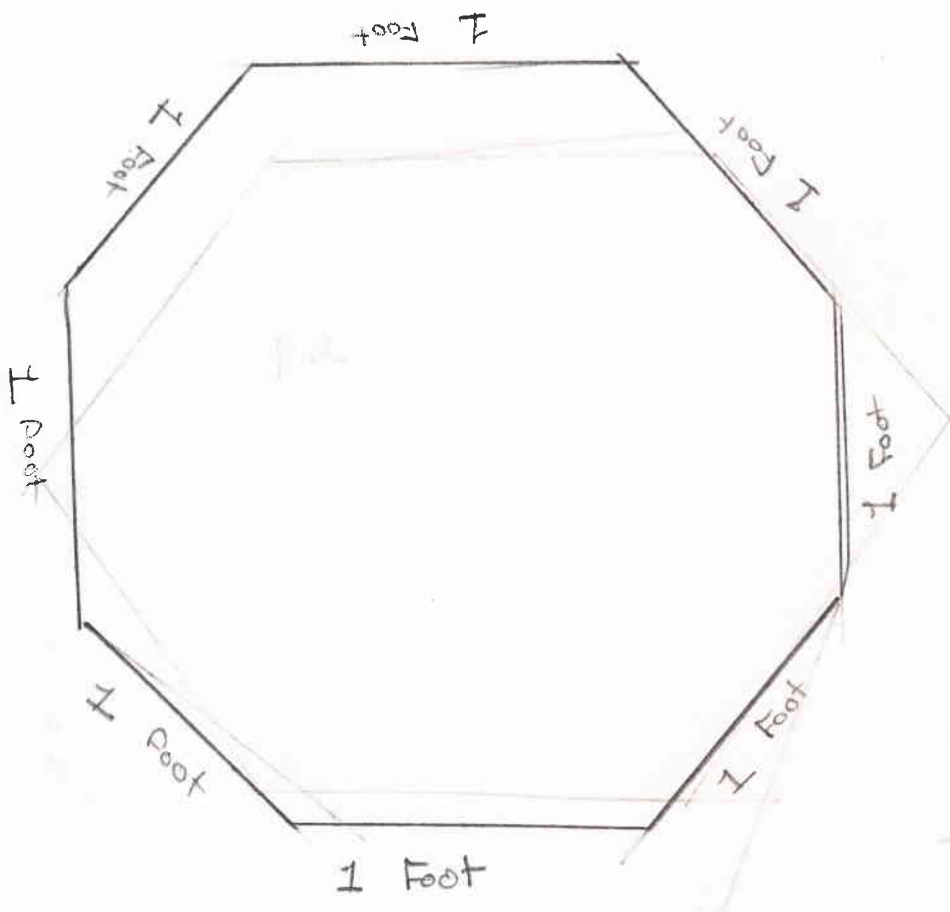
$A = \pi r^2$



John slept and slept untill the next morning when he woke up. It didn't take long for John to realize that something was wrong. When he looked around the room, all he could see was shapes. There were triangles, squares, and many others that John didn't even know the names of. They were everywhere! Then he realized that it was the geometry that did this to him. Geometry is the math that has to deal with points, lines, angles, and shapes. He had actually studied for so long, now all he could see was shapes.

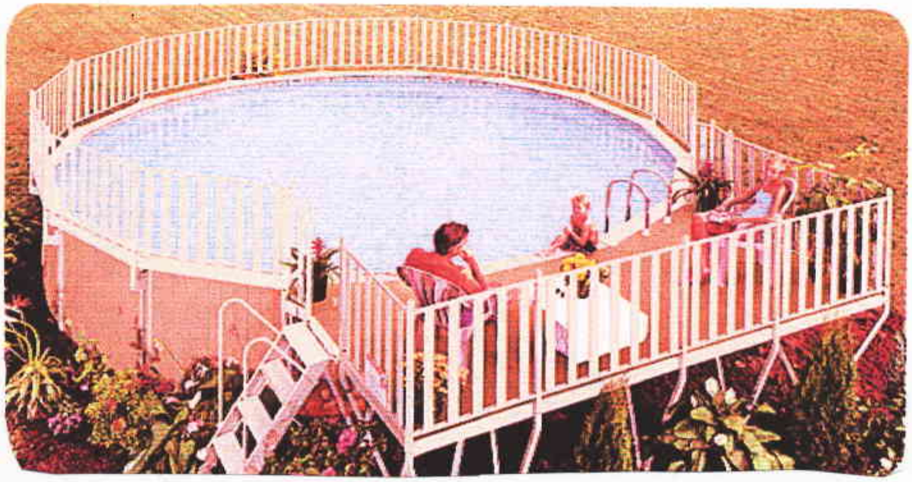
John, a little scared and a little confused, decided that he wasn't going to let this geometry problem get in the way of having fun during the weekend, and since it was a Saturday, John decided to pay his good friend Sam Redd a visit, by going down to his house. He hopped on his bike and was off. As he was making his way to Sam's house, he saw a stop sign. When he saw it this time though, it was much different.

He knew that the stop sign was a polygon, which is a figure, or a shape, with three or more sides. He also knew that is was an octagon, which is a polygon with 8 sides. When he looked closer, he wondered what its perimeter was. John knew that a perimeter is the length of the outside of the shape. John knew he could find this by taking the length of one side of the octagon and multiplying by 8, since there were 8 sides and all 8 sides had the same length. After measuring the length of one side, he quickly figured out that the perimeter was 1 foot X 8 sides, which is 8 feet.



perimeter = 8 Feet





After his short stop at the stop sign, John finally arrived at Sam's house, where Sam was waiting for him.

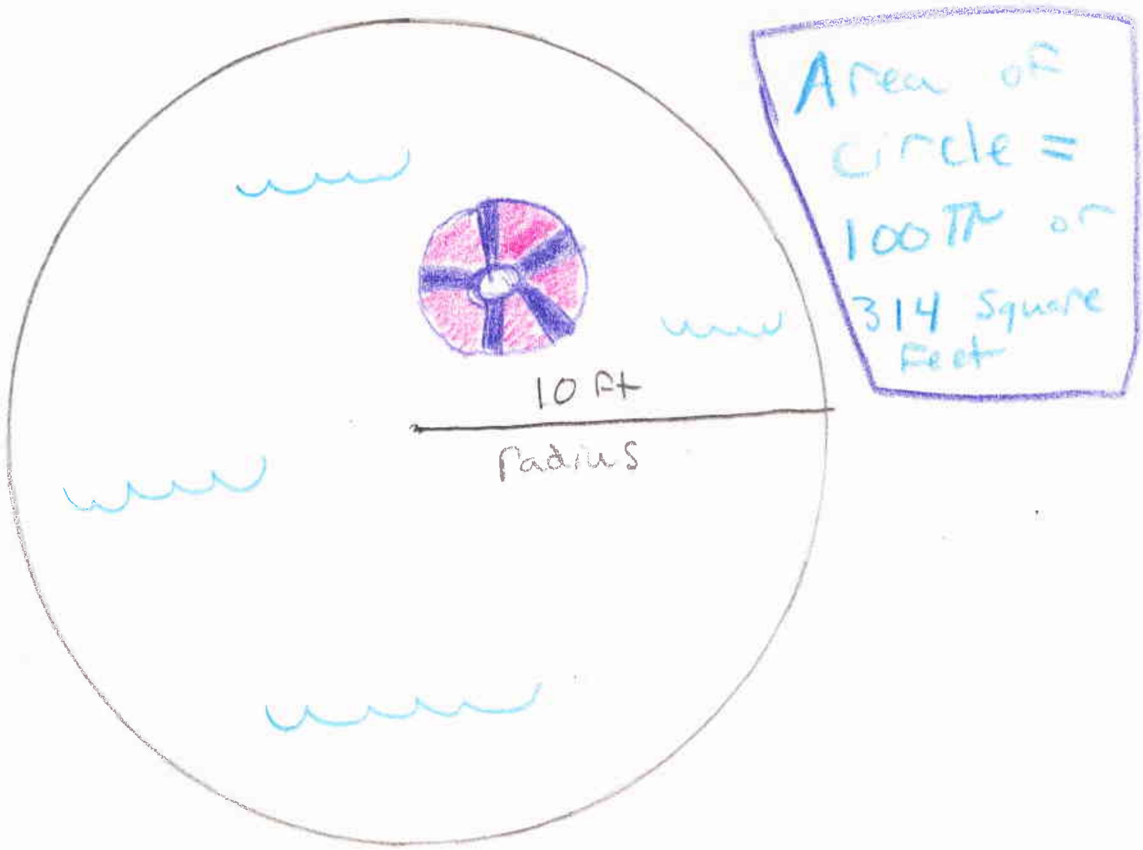
"John," Sam cried out, "I have to show you something!"
Sam led John to his backyard where there was a brand new pool, in the shape of a circle.

"Wow," John said. "How big is it?"

"That's the problem," Sam said. "We don't know. And worse, we need to get a cover to put over the pool, but we don't know what size to get."

"That's no problem," John said. "We can figure it out."

The two went to work to try to find the area of the top of the pool, where the cover would need to go. The area of a shape is how much space that shape takes up. John and Sam knew they needed to find the area of the top of the pool, which is a circle. The area of a circle = π x (rxr). R in this case is equal to the radius, which is how far from the center of the circle to the edge of the circle, and π or pi = about 3.14. After the two measured, they found that.the pool had a radius of 10 feet. John put the numbers into his calculator, which he carried with him eveywhere, and found out that the area was π x (10x10), which was 100π, which is around 314 square feet.



$A = \pi(r \cdot r)$ $\pi(10 \cdot 10) = 100\pi$

"Well, now that we have the area of the pool, we should find the circumference of the pool," Sam said.

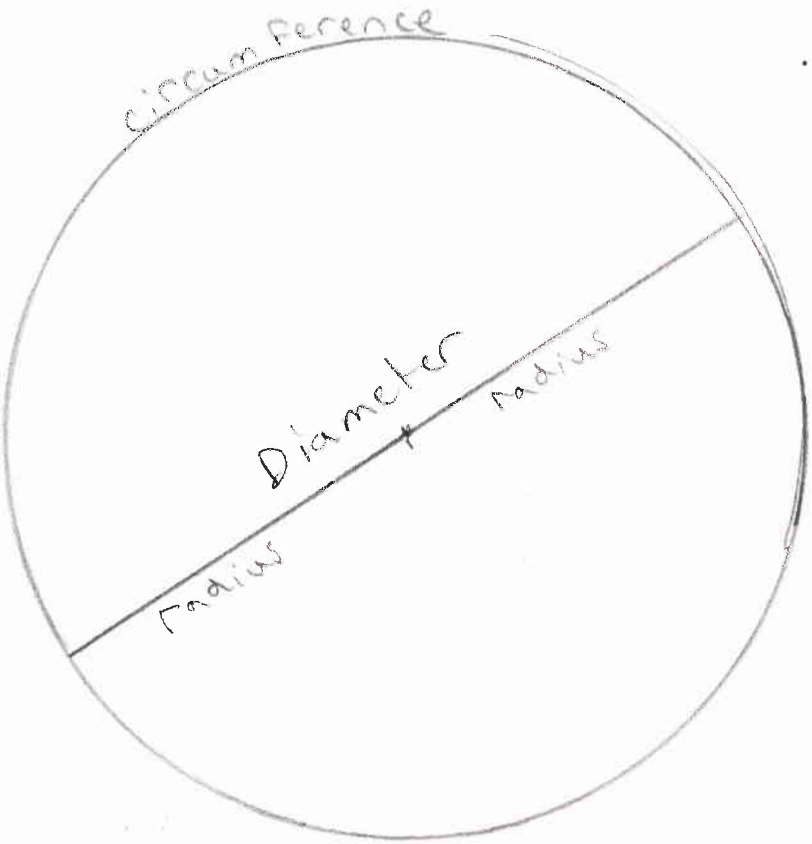
John and Sam both knew that circumference is just the perimeter of a circle, or how long the outside of the circle is.

"The circumference of a circle is π x D, or π x the diameter of a circle," John said.

"Wait, what is a diameter again?" Sam asked.

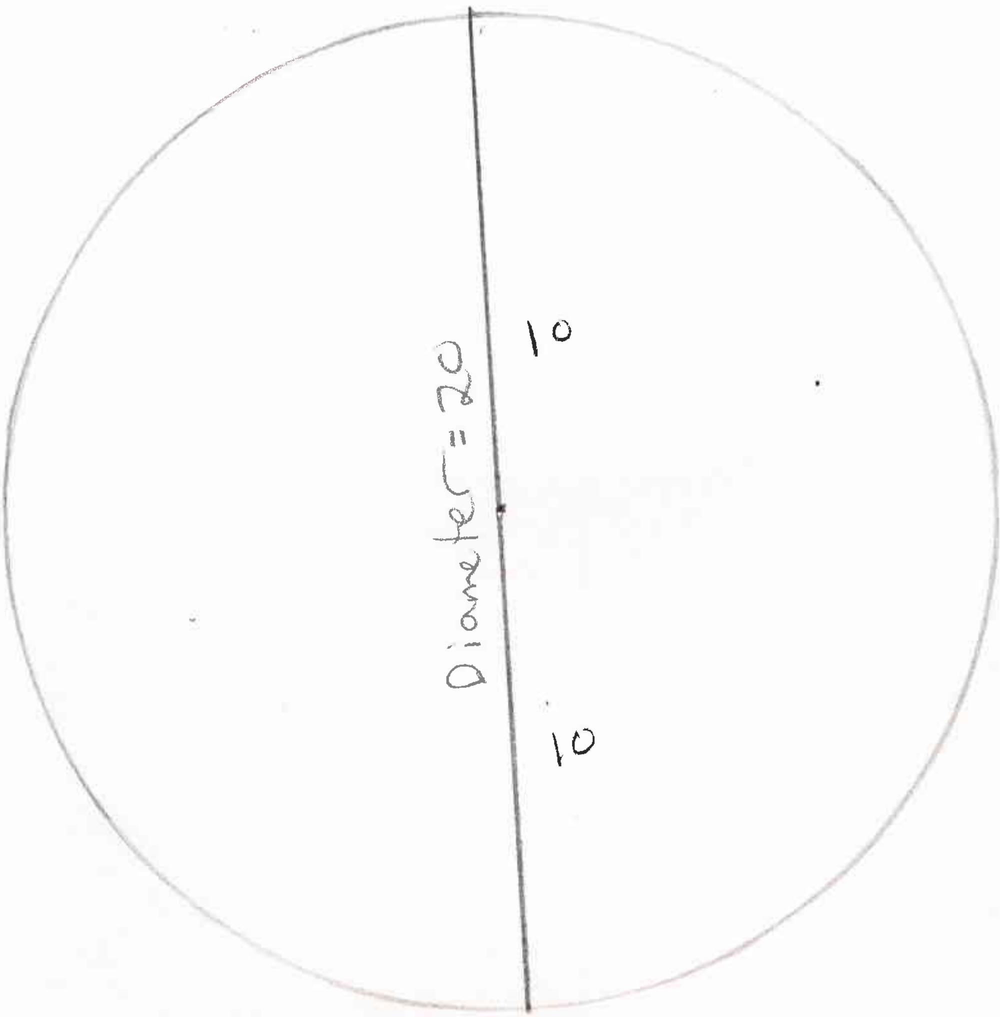
"The diameter of a circle is how long the circle is across or two times the radius," John replied showing off his superior math skill.

$\boxed{\text{Circumference} = \pi \cdot D}$



Circumference = $\pi \cdot D$

$\boxed{\pi \cdot 20 = 62.8 \text{ Feet}}$



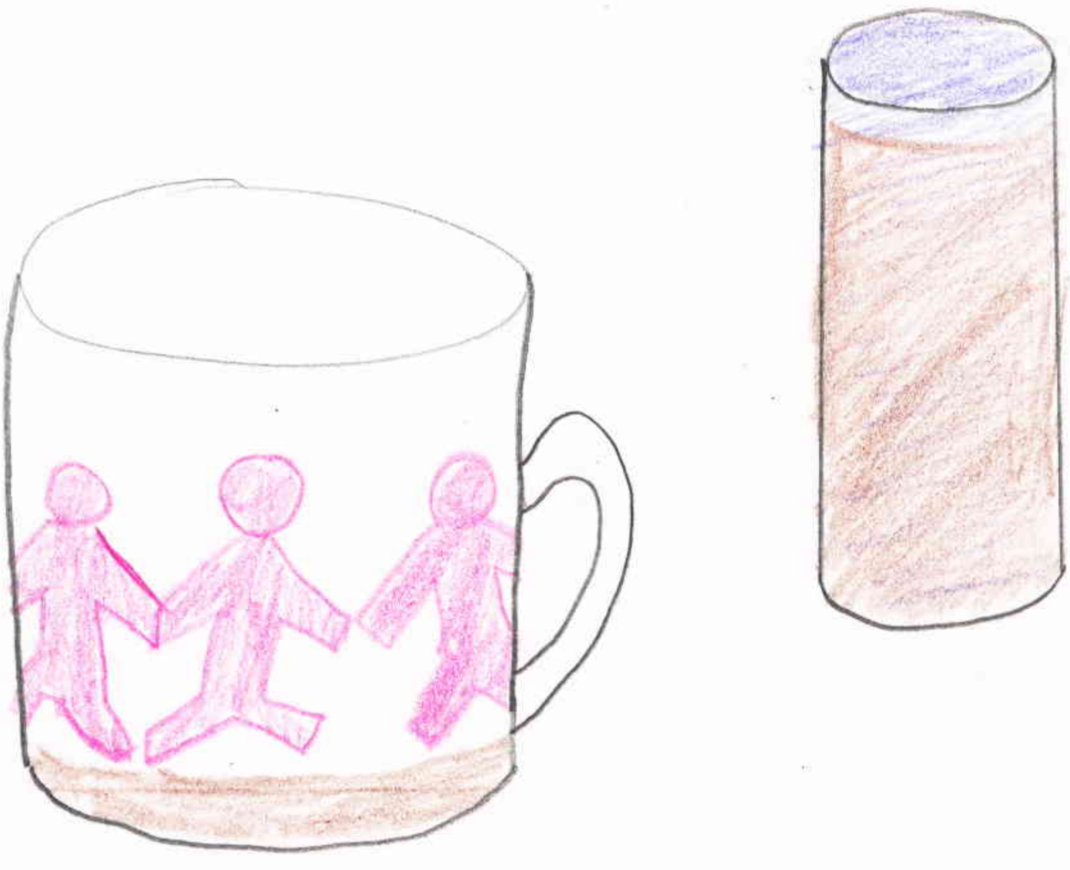
The two once again got to work, this time trying to find out the circumference of the pool. They knew the formula was π x diameter, and they knew that the diameter was 2 x 10, since the radius was 10. From this, they figured out that the circumference of the pool was 20xπ. Sam put the numbers in the calculator and learned that the circumference of the pool was about 62.8 feet.

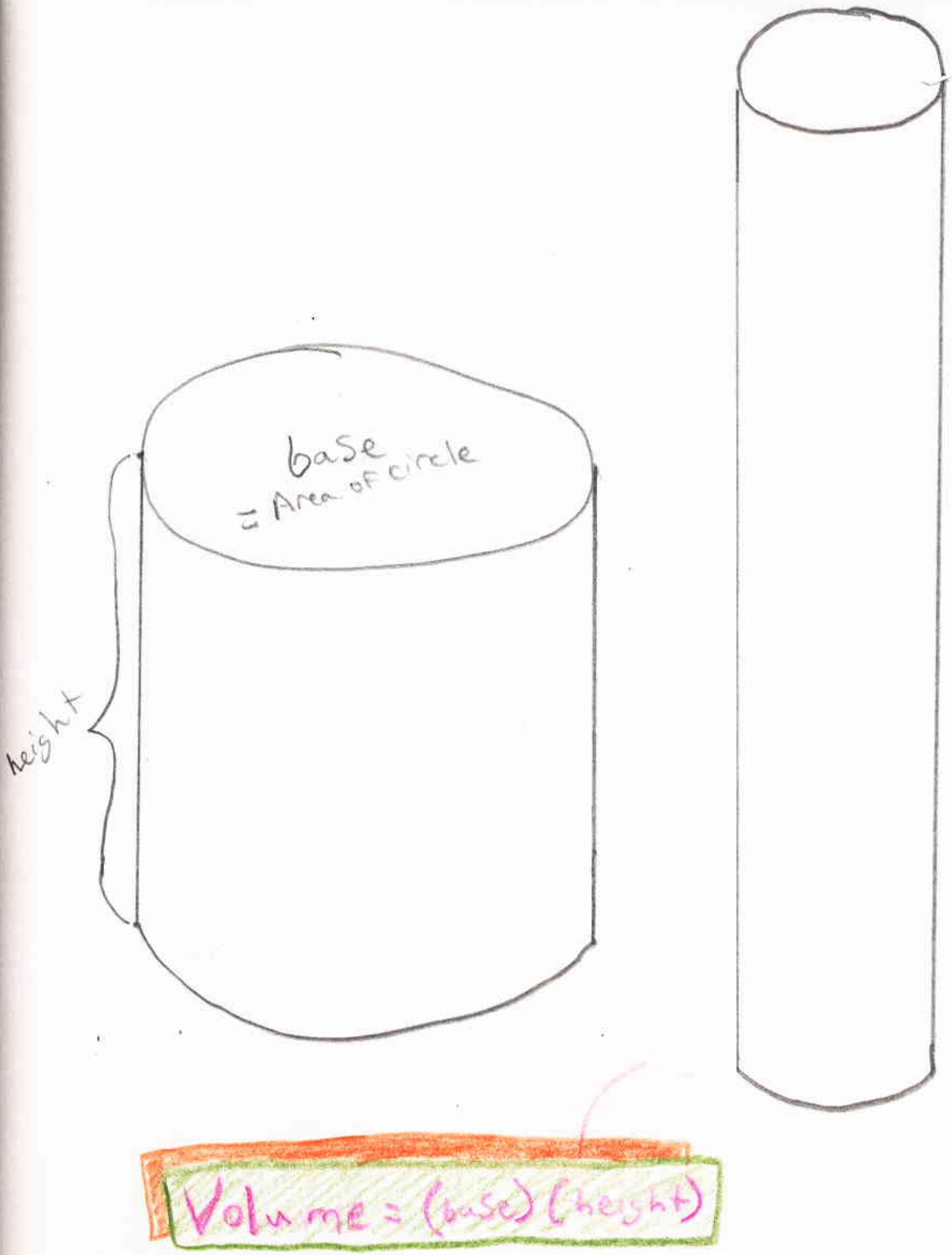
As the day wore on, it came time for John to leave, so he went to Neil Pickerings house to listen to a new cd. Neil and John ended up playing football for 2 hours at the park. After lots of heat and sweat, John and Neil went back to the house to get something to drink. Neil got two glases out and filled them up with iced tea, but something was wrong.

"Hey," John said, "you got more than me! Your cup is wider!"

"No," Neil said, "You got more than me. Your cup is taller!"

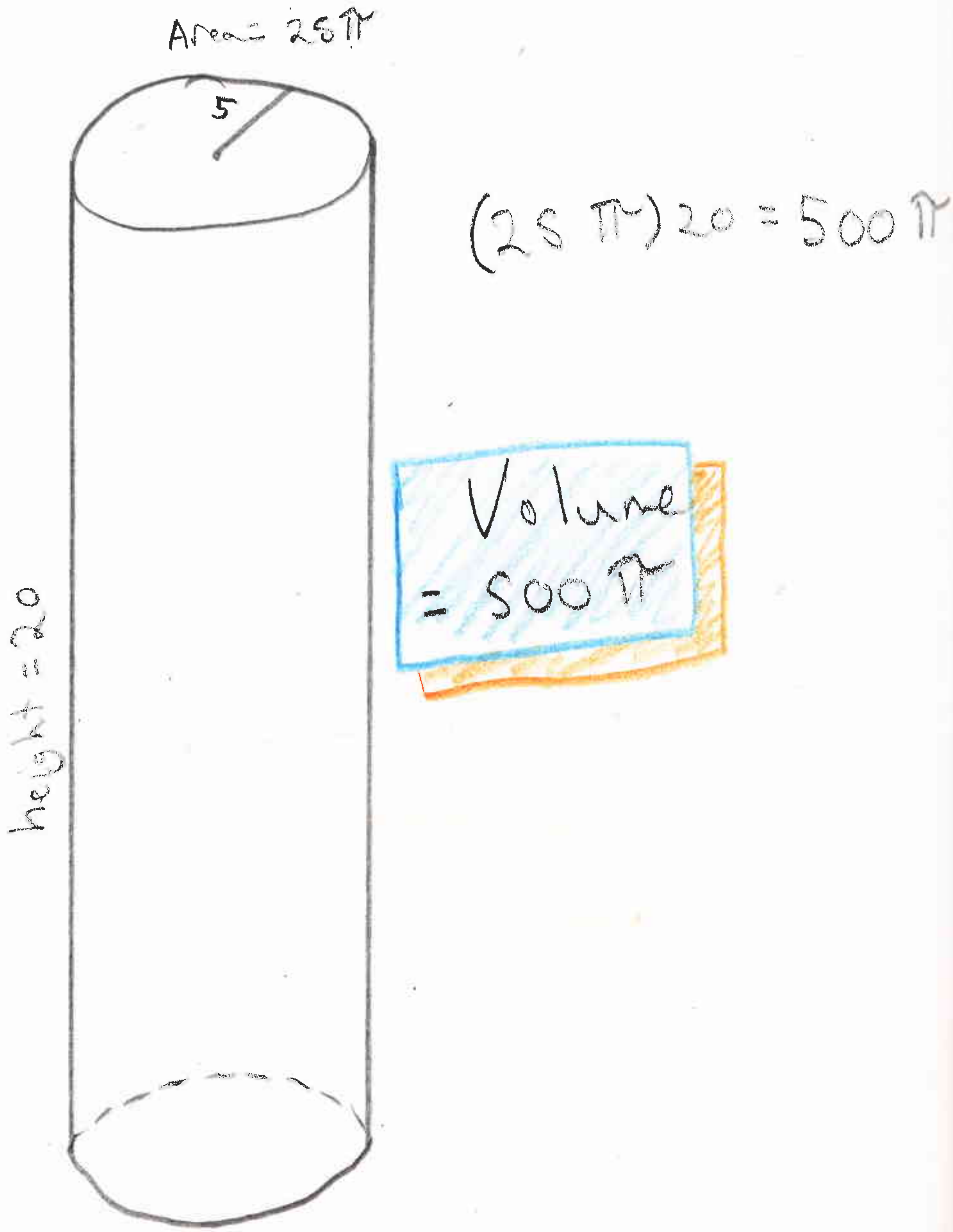
The two boys argued untill they decided to use geometry to learn which cup was bigger.

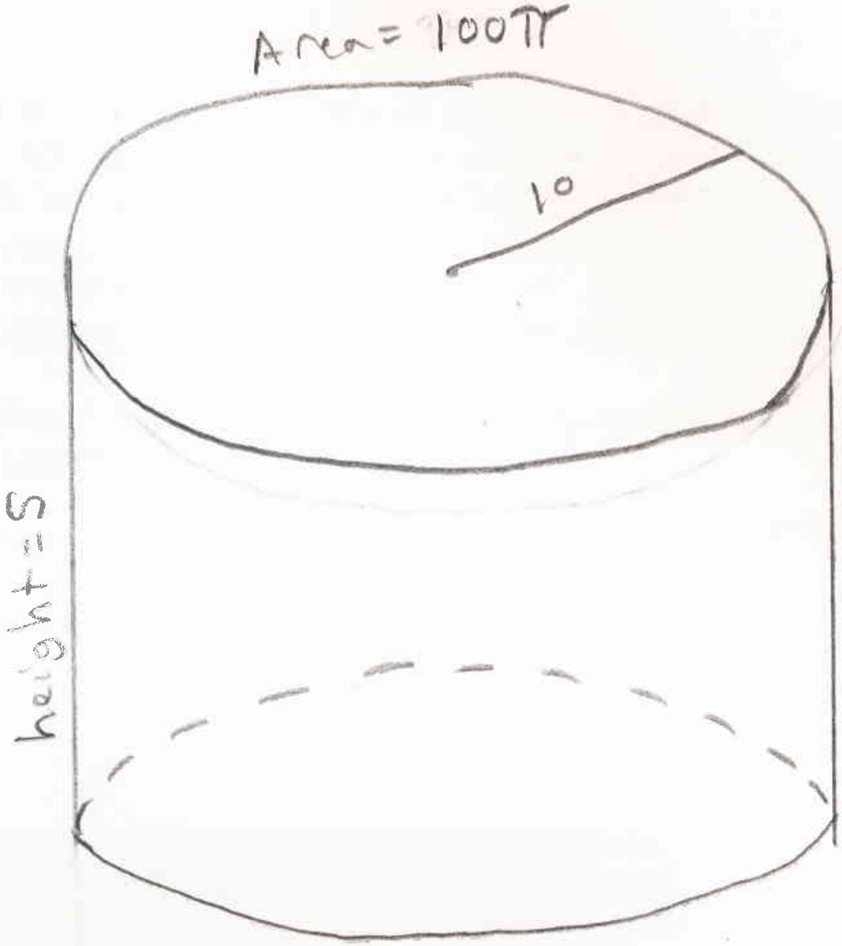




Neil pointed out that both cups were cylinders, so they only needed to find which one had a bigger volume to decide which one was bigger. A cylinder is an object or shape with straight sides and circular ends of equal size, like a tube. Volume is the amount of space, measured in cubic units, that an object takes up. In order to find out the volume of the cups, John and Neil took the base of the cylinder (the base of a cylinder is the area of the circle on the bottom) times the measure of the cylinders height, so volume of a cylinder = Base x height.

First John had to find the volume of his tall, skinny cup. The base on the top had a radius of 5cm, so the area of that circle was π (5x5) or 25π. Then he multiplied the area of the base x the height, which was 20 to get 25π x 20, which is the same as 500π. John's cup had a volume of 500π.

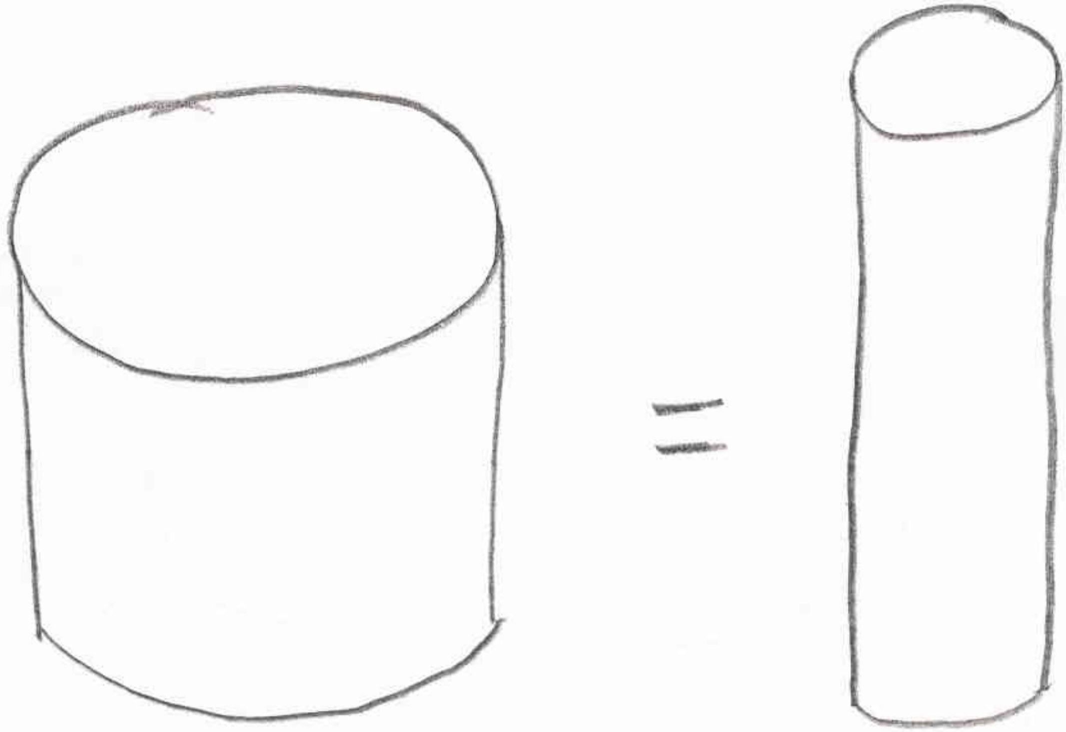




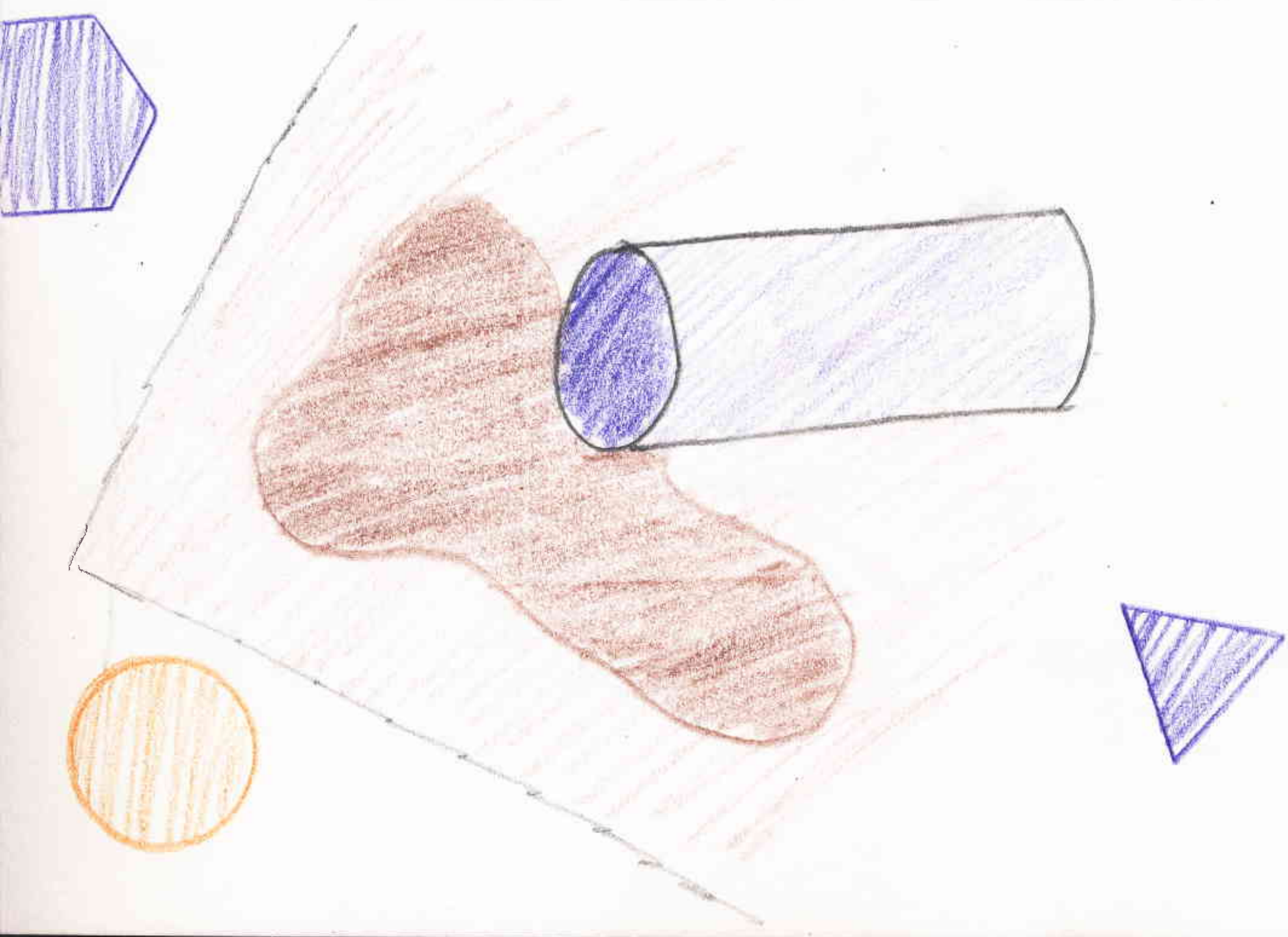
$(100\pi)5 = 500\pi$

$\boxed{\text{Volume} = 500\pi}$

Then Neil had to find the volume of his short, wide cup. The radius on top of this cup was 10 cm, which made the area π(10x10) or 100π, which was the area of the base. Then he took the base x the height, which was 5, to get the volume, which was 100π x 5 or 500π. Neil's cup also had a volume of 500π.



John and Neil looked at each other and then realized that their cups had the same volume, which meant that they both had the same amount of ice tea. Unfortunately, by the time they had got all the measurements, solved the formulas, and produced the volumes, the ice had melted and the tea was all watery, so they had to throw it out.



The rest of the weekend went by in a blur. Everywhere he went, everything he did, he saw geometry. He solved volume equations, area equations, and found the perimeter to all sorts of shapes and figures, and every time he did it, he understood geometry that much better. By the time Monday had come around, John felt completely ready for the big test. He went to his geometry class, and was handed the test.

"John," Mrs. Powell asked, "did you study for the test?"

"Yeah," John Replied, "I studied."